

REMARKS

The foregoing Amendment and remarks which follow are responsive to the Office Action mailed February 14, 2003, in relation to the above-identified patent application. In that Office Action, the Examiner rejected Claims 1-14 under 35 U.S.C. §103(a) as being unpatentable over the combination of Prior Art Figures 1 and 2 and the Okumura et al. reference. By this Amendment, Applicant has cancelled Claims 1-14, and added new Claims 16-35 into prosecution. Of these, new Claims 16, 25 and 31 are independent in nature, with the remaining claims being dependent upon respective ones of the new independent claims.

In each of new independent Claims 16, 25 and 31, the leads of the semiconductor package are described as being configured such that the bottom surfaces thereof which are exposed in the encapsulation material are of at least two different lengths. For reasons which will be discussed in more detail below, Applicant respectfully submits that the Okumura et al. reference, relied upon by the Examiner for its teaching regarding leads of differing lengths in a semiconductor package, does not teach, suggest or show leads having bottom surfaces which are exposed within an encapsulation material or package body, and are of differing lengths.

Those embodiments of the semiconductor device described in the Okumura et al. reference which appear to depict leads of differing lengths are the fifth embodiment shown in Figures 5(a) and 5(b), and the sixth embodiment shown in Figures 6(a) and 6(b). The semiconductor device of the fifth embodiment is described as including leads 13 which barely protrude from the side faces of the sealing resin 15, as is shown in Figure 5(a). Each lead 13 is further described as including a stepped portion 22 formed by removing an inner bottom portion thereof to provide enhanced adhesion between the lead 13 and the sealing resin 15 (column 14, lines 35-38). As is apparent from consideration of the specification of the Okumura et al. reference and the showings in Figures 5(a) and 5(b) thereof, the bottom surfaces of the leads 13 which are actually exposed in the sealing resin 15 are of identical lengths. Though the half-etched portions of the leads 13 which extend inwardly from the stepped portions 22 are of differing lengths, these half-etched portions are completely covered by the sealing resin

15, and are not exposed therein. The exposure in the sealing resin 15 of only the identically sized bottom surfaces of the leads 13 is clearly shown in Figure 5(a), and is apparent from Figure 5(b). The same holds true in relation to the sixth embodiment of the semiconductor device shown in Figures 6(a) and 6(b).

In contrast, as explained above, each of independent Claims 16, 25, and 31 now pending in the present application specifically describes the leads as being configured such that the bottom surfaces thereof which are exposed in the encapsulation material are of at least two different lengths. As is specifically described in the specification of the present application, these differing lengths of the bottom surfaces of the leads which are exposed in the encapsulation material provide increased surface area and thus greater solder joint strength at the interface with the motherboard. These advantages are not provided by the Okumura et al. reference, in that the bottom surfaces of the leads 13 which are actually exposed in the sealing resin 15 are not shown or described as being of differing lengths to provide increased surface area, but rather are of identical length as indicated above.


On the basis of the foregoing, Applicant respectfully submits that new independent Claims 16, 25 and 31 are in condition for allowance, as are Claims 17-24, 26-30 and 32-35 as being dependent upon respective allowable base claims. An early Notice of Allowance in relation to Claims 16-35 is therefore respectfully requested.

If any additional fee is required, please charge Deposit Account Number 19-4330.

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